LEAD/CALCITE WORKINGS IN THE DEEP DALE AND BULLHAY DALE AREA, NEAR CHELMORTON, DERBYSHIRE

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Abstract. This paper brings together various archival records, maps and documents to form, where possible, the history of each of the mines/veins that are located within these relatively un-spoilt limestone dales. Descriptions of both the surface and underground remains, along with the geology, will also be discussed. Also included are notes on the general area.

Introduction.
Deep Dale (SK097 714), and its tributary valleys, to the east of the small village of King Sterndale (SK095 720) is one of the Peak Districts most picturesque and rugged limestone dales with tall limestone cliffs and scree slopes that tower above the footpath. The dale runs in a generally southerly direction for a distance of 2 miles from the Wye Valley to the limestone plateau southeast of the village of Chelmorton (SK113 699). The wall running along the bottom of Deep Dale conveniently marks the boundary between Chelmorton Liberty to the east and King Sterndale Liberty to the west.

A wet weather stream runs through part of Deep Dale fed by two resurgences in the dale floor; the more southerly rises below Thirst House Cave, with the more northerly rising from a fault line that crosses the dale from east to west (see 5 below). The dale is mainly unspoilt by modern industries apart from its northern end where the large slurry (settling) ponds associated with the massive Topley Pike Limestone Quarry (SK 098 722) almost block the dale floor. The large and unsightly disused crushing/screening plant that stood at the junction of Deep Dale and Marl Dale (SK 103 721) has recently been removed. Thirst House Cave in Deep Dale along with Churn Hole Cave and rock shelter in Marl Dale were archeologically excavated in 1880-1890s by Micah Salt of Buxton. He discovered human remains outside the cave entrance (Thirst House) along with animal bones, jewellery, pottery and other artefacts from within the caves (Churn Hole and Thirst House).

The main part of Deep Dale is crossed from east to west by at least four mineral veins, all of which have short but accessible mine workings whilst close to the junction of Bullhay Dale and Horseshoe Dale (SK 001 702) is the large and visually striking entrance to a large 20th century calcite mine that could, possibly, have earlier origins as a lead mine.

Geology and the veins.
Deep Dale and its tributary valleys (Marl Dale, Back Dale, Brierlow Dale, Horseshoe Dale and Bullhay Dale) are all typical limestone dales with high limestone cliffs and scree slopes. The ground rock is the Bee Low Limestone which in turn is underlain by the Woo Dale Limestone. This strata is traversed by two or possibly three faults which contain the mineral veins previously mentioned.

The veins (Fig. 1) noted below are all shown on the modern (1976) geological map of the Deep Dale area. A thorough description of the geology of the area can be found in *Geology of the country around Buxton, Leek and Bakewell* (Aitkenhead et. al. 1985).

1a. Churn Hole Cave Vein. (original name not known). Little comment can be made regarding this vein which was noted by Turner (1899). The only visible evidence for its existence is to be seen within the cave in Marl Dale (see 2f below); no surface expression is known (Plate 1).

1b. Slurry Pond Mine Vein. (original name not known). The vein runs diagonally up the eastern side of Deep Dale from the lower pipe working (see 2a below). Surface evidence appears to show that very little work, perhaps only exploratory, was carried out along its range. The range of the vein is exposed in a nearby quarry roadway cutting and appears to be predominately composed of calcite.

1c. Hading Vein. (original name not known). The vein is contained within a steeply inclined fault that traverses the eastern side of Deep Dale. Apart from the level and adjacent trial (see 2b below) no other working appears to have been carried out along its range.

For clarity it is necessary to note the following two veins separately. The two veins were freed at different times and, although both named Chance, range in different directions from a common point in the floor of Deep Dale (see 2d below).

1d. Chance Vein c1770. This vein ranges south eastwardly from Chance Mine in Deep Dale to terminate to the east of Burrs Farm (SK 1061 7105) and adjacent to the junction of Old Coal Pit Lane and Senners Lane (SK 112 709). On the eastern side of Deep Dale, above Chance Mine, the vein is easily discernable, with typical hollows and hillocks. Where the vein crosses the cultivated fields towards, and beyond Burrs Farm, all surface expression of the vein has been removed.

A very short length of this vein has been mined from within the inner chamber of Thirst House Cave during the 1750s at Spice Pudding or Thirsthouse Mine (see 2c below).Turner (1899) alluded to the fact that the vein ranged westwardly from Deep Dale into King Sterndale Liberty and continued towards Highcliff near Cowdale hamlet (SK 084 719). All surface expression of the vein in this direction appears to have been removed (see 2d below).

1e. Chance Vein c1841. The range of this later vein is north eastwardly from Chance Mine in Deep Dale, from where it crosses the head of Marl Dale, and possibly continues to connect with the western range of the Horsesteads/Glory/ Portaway vein system. The surface expression of this vein appears to have been removed apart from a small length of disturbed ground to the east of the head of Marl Dale (SK 1075 7155).

1f. Bullhay Dale Vein. (original name not known) This predominately calcite vein has a range almost east-west. The visible portion in Bullhay Dale appears to be contained within a fault showing large, and perfect, examples of 'slickensides'. The vein appears to be on the westerly range of the Grove/Wham Rake system or a branch from it (Plate 2).

Fig. 1. Map showing veins, mines and cave features near Deepdale and Chelmorton, Derbyshire. After Rieuwerts 2001 and based on 2nd Edition OS. provided by courtesy of Digital Archives, Warrington.

The mines/caves. (Fig.1).
This section discusses the remains at the individual mines and their subsequent history, as known at the time of writing.

2a. Slurry Pond Mine. (original name not known).
This small mine is located at SK 1025 7195 on the eastern side of Deep Dale about 30 feet above the rough track that skirts along the eastern side of the large slurry or settling ponds belonging to Topley Pike Limestone Quarry. The vein runs diagonally up the eastern dale side and a cutting in the floor of the dale alongside the quarry track exposes the vein, which appears to be predominantly calcite with thin strings of galena.

The accessible mine workings comprise of a single pipe-like chamber (20 feet x 10 feet x 8 feet high) with a possible blocked shaft in the floor. Outside is a small flat-topped hillock with a small wall of deads holding back mine debris. In the adjacent vein marked by grass covered hillocks and hollows there are several very small openings that are unfortunately too small to enter. Interestingly the orientation of the vein puts it on the westward projection of the Horsesteads/Glory/Portaway Vein or a branch from it. Nothing is known about the history of this mine and there are no apparent records to it in the Barmasters Book of Entries for Chelmorton Liberty.

2b. Hading Vein Level. (after Rieuwerts, 2001) (original name not known, but called Three Js Cave in a modern caving guide (Gill and Beck. 1991)).

This mine is situated at SK 0985 7155 in a steeply hading vein, located in a fault, that runs diagonally up the eastern side of the dale. It comprises a stooping-height level (3-6 feet high) driven into the daleside in an easterly direction for a distance of approximately 160 feet. The vein is again predominately calcite with small strings of galena. Relatively large diameter shotholes, when compared with 20th century shotholes, are evident along the whole length of the level.

Outside is a fairly large flat-topped scree slope possibly modified by the miners to form a working platform. No coe is evident. Above the entrance to the level and in the same fault zone is a short trial working of a few feet in length.

The vein appears to be naturally drained by the powerful Deepdale Side Resurgence in the dale floor at SK 0981 7155. A possible miners track leads from the hillock diagonally uphill to the crest of the daleside. No historical details of this mine are known at the time of writing.

Warning. Recently a massive collapse as occurred in the fault zone above the entrance to Hading Vein Level resulting in huge blocks of limestone rolling to the dale floor immediately below. The immediate area above the level is highly unstable and therefore best avoided.

2c. Thursthouse or Spice Pudding Mine. (Plates 3 and 4)
This very short working is situated at the back of the inner or second chamber of the large Thirst House Cave (First or outer chamber 10-20 feet wide x 5-20 feet high x 100 feet long. Second or inner chamber 10-20 feet wide x 5-20 feet high x 70 feet long) (SK 0971 7129). The vein (Chance), which hades steeply to the north, appears to be mainly calcite with galena stringers and shotholes can be seen in several places. It appears that the miners have cut through the natural stalagmite floor of the cave in their search for workable ore deposits. Immediately outside the entrance to the working a small area of dressed material covers the floor of the chamber indicating that some underground ore dressing as taken place. A single shothole is evident within the area covered by flowstone and it appears that the miners have 'spalled' away the flowstone in an attempt to discover whether there was workable ore beneath.

Sites near Deepdale and Chelmorton.

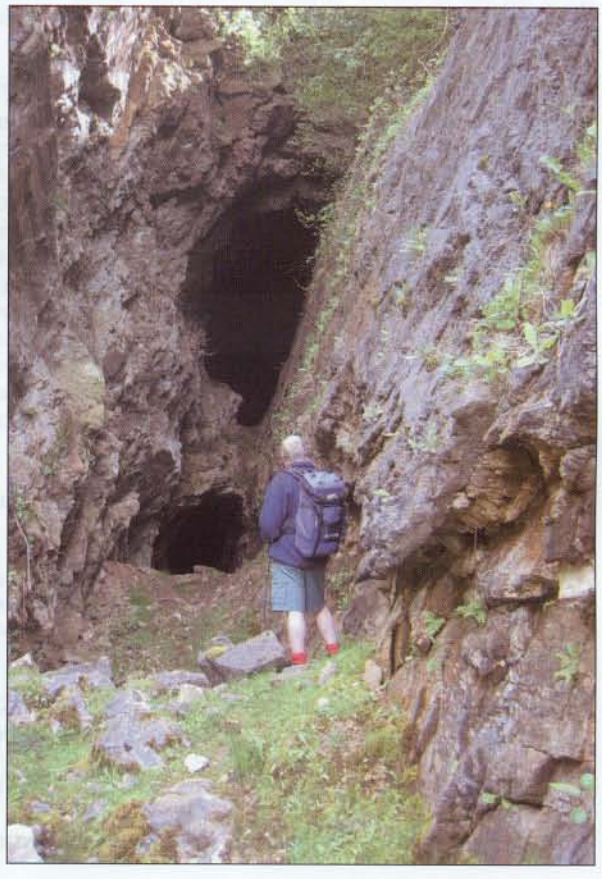
Plate 1 (above). Churn Hole Cave, Marldale.

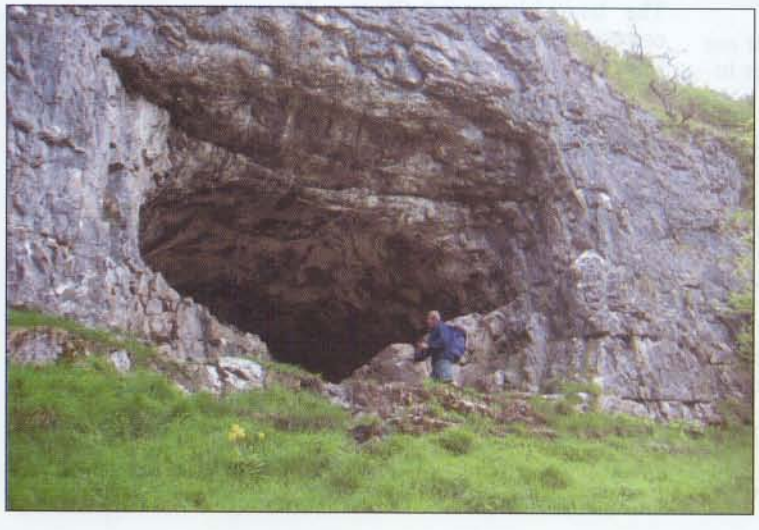
Plate 2 (above right). Trial level in Bullhay Dale.

Plate 3 (centre). Thurst House Cave with Chance at bottom left.

Plate 4 (bottom left). Thurst House Cave, Deepdale.

Plate 5 (bottom right). Entrance to Bullhay Dale Calcite Mine.





The stalagmite floor of the large chamber as been cut through in several places although this is thought to be the results of the archaeological excavations which took place here in the 1890s (see below).

The history of this mine is very sparse and from the evidence given it appears that the vein was only worked for a short period. The ore totals for the mine amounted to 4 loads and 4 dishes during 1754 and 1755. Unfortunately the names of the miners are not recorded (Rieuwerts 2001). Over 30 years later Pilkington (1789) notes the following

... there is another (cave) *in Chelmorton Dale* (Deep Dale), *the mouth of which is open to the day. The height and width of the arch at the entrance are about eight yards each. Formerly its whole length was only about eighty yards. But a miner observing a vein of lead ore at the end began to work it, and broke into another cavern, considerably higher than the former, but very nearly of the same length. When first opened it appeared very beautiful on account of the large quantity of water-icicle hung from its roof and sides.*

The above statement is very interesting on account of the length of the cave quoted. The accessible chambers of the cave today almost equal this yardage. It is possible that the *vein of lead ore at the end* is the one that is now known to be Spice Pudding or Thirst House Mine on Chance Vein. It is also possible that the main mine workings on this vein are no longer accessible on account of movement of the massive floor choke within the second chamber blocking access.

The following could be an oblique description of the mine workings that are now hidden. Turner (1899) noted the following account from the *Buxton Herald* (12th March 1890) Which could be describing the levels and stopes of Spice Pudding or Thirst House Mine on Chance Vein

At the further end of the chamber there was a hole in the stalagmite floor which had been made by Dr. Bennett. After passing through this aperture there was a drop of 6 feet, which leads into a chamber 17 feet long, 3-5 feet wide and 6 feet high...They came to another chamber...whence they passed to another chamber. To the right there was a passage...At the end of this passage they crawled through a small hole from whence they dropped...into another chamber 40 feet long...The floor was level...at the end of which there was a passage, along the bed of which, in wet weather, ran a small stream. The following week they could see there was another long chamber below...

Chance Vein was certainly named and in work from 1782, by William Bateman, but it is highly likely that the vein was freed before 1770, when the surviving ore accounts start, because there is no record of a gift of the mine at the later date. Slightly later, in 1787, Chance Vein was being worked by Benjamin Farmer. The two miners, seemingly working independently, produced ore from Chance Vein for a total of twenty years or more. During this time 10-20 loads were produced per annum. The exact location of their workings on the vein are not known but are presumed to be within Chelmorton Liberty to the east of Deep Dale (Rieuwerts 2001), and it is possible that these men were getting their ore from the hidden workings (?) beyond the second chamber in Thirst House Cave.

Turner (1899) describes the vein containing Spice Pudding Mine in some detail

The fissure that has just been noticed is a portion of a mineral vein (Chance Vein), *stretching in a W.N.W. and E.S.E. direction from Highcliff* (Plantation?), *half-a-mile west of Deep Dale, to the vicinity of Chelmorton Low.*

Turner then goes on to describe the short working at Chance Mine situated on the outcrop of the same vein (see 2d below).

2d. Chance Mine. (formerly known as Pool Cave (Ford. 1967)).
This mine is situated on the outcrop of Chance Vein on the eastern side of Deep Dale at SK 0969 7135 about 30 feet above the dale floor and about 150 feet north of the entrance to Thirst House Cave. The vein being about 4 feet in width at this point is predominately calcite with very small amounts of galena in thin strings and hades steeply to the north. Its surface expression, comprising of shallow hollows, can be traced up the steep dale side.

The entrance to the mine is conspicuous and leads to a small stope working (6-12 feet high x 3-8 feet wide x 30 feet long) with a sloping floor. In the southern wall of the stope a small cavity as been mined, using high explosives, in apparently barren limestone, possibly to intersect a parallel calcite vein that lies a few feet to the south.

Shotholes of possibly 18th century date are prevalent throughout the whole stoped area along with shotholes dating from the early 20th century re-working of the mine (see below). At floor level, at the back of the stope, is a low partly-filled short length of passage, devoid of shotholes, that is highly likely to be a remnant of the original 18th century workings (see 2c above). Close inspection as revealed that from the sooty deposits covering the walls and roof that it could have possibly been driven using 'firesetting' (J. Barnatt pers. comm.).

Turner (1899) notes the following regarding Chance Mine

The outcrop of this 'rake' can be distinctly traced a few dozen feet lower down the valley, just beyond the point where it bends to the NE. One portion is cleared of its contents, apparently by natural means, and forms a fissure-like cave...The heaps of sparry refuse on the valley side below indicate that the vein has been worked, but certainly to no great extent. It hades, or leans, to the left, that is, north....

It appears that Turner thought that the mine was part natural, which is understandable even when the entrance is seen today. The *sparry refuse* he notes is still very evident today below the mine entrance although now it is somewhat covered with vegetation.

It is clear that Turner is describing the mine before the re-working by Micheal Simpson of Chelmorton during 1912-15 (see below). It is possible that this is one of the locations either worked by Benjamin Farmer or William Bateman during the 1780s (see 2c above).

Turner also states the following

There is a small cave higher up the opposite (western) *side of the dale, which as all the appearance of having originated in the same vein...*

A recent thorough search of the opposite side of the dale, on the range of the vein, has failed to locate any evidence of this cave.

The later history of Chance Mine is contained in the correspondence of George Eagle, Barmaster of the High Peak (Flindall 1998), and similar to Bullhay Dale Calcite Mine (see 2e below), dates from late 1912 until late 1917 and concerns Michael Simpson of Chelmorton (Letter from Michael Simpson. December 9th 1912)

I would like to meet you at your office so that I can point out on your maps the mine that I have been opening out in Deep Dale.

Although the mine is not named at this date later correspondence corrects this. It is clear that Simpson began work at the mine sometime in 1912 or possibly earlier. Nearly three years passed before Simpson again contacted George Eagle (Letter from Michael Simpson of The Ditch, Chelmorton. June 11th 1915)

I have found a vein consisting of a mineral of which a sample is enclosed. Some locals call it cawk or brown ore &c. You may

remember that a little over two years ago I met you with Mr. Hall re mines in Deep Dale (Chelmorton) 'and I took your advice and kept driving in and am pleased to say the prospect is looking grand and the Lead keeps improving'.

It appears that Simpson was finding barytes as well as galena and calcite at Chance Mine. Three weeks later the Barmaster contacted the following person (Letter to the Clerk of the Council, Duchy of Lancaster Office, London. July 2nd 1915)

For a year or more Michael Simpson has been working an old lead mine in Chelmorton called Chance Mine...The mine will not pay if only worked for lead and Mr. Simpson is to try to come to an agreement with the landowner for mining calcite...

Also included with this letter was a plan showing the location of Chance Mine (on east side of Deep Dale just north of Thirst House Cave). It appears that Simpson was intent on working the mine for calcite, the lead he reportedly found, three weeks previously, was obviously not economically viable. Simpson had difficulty in negotiations with the landowner regarding the transport of calcite from the rather isolated location of the mine, as follows in a letter to the Duchy from George Eagle (Letter to the Duchy Solicitor. September 16th 1915)

...cannot see his (Simpson) *way to spend capital on development when there is no access road except for lead ore. A haulage engine and tramway to the top of the dale would be necessary to get spar from Chance Mine to a public road.*

It thus seems that Simpson would have continued to work Chance Mine for calcite had he been given access rights. His efforts appear to have been fruitless regarding this aspect although he remained in ownership of the mine for a further two years. It is not known if any more work was undertaken during this period. In October 1917 the mine was sold to Mr. W. Noaks of Burton-on-Trent for about £10, and again it is not known whether he did any work at the mine. During the sale proceedings a letter from George Eagle reveals the connection with the original Chance Vein of 1841 (Letter to Michael Simpson. October 26th 1917) (see 1e above)

The title (which is extensive) was laid out in 1841...you obtained possession of the mine by Workmanship...

This is the last occasion when Chance Mine is mentioned by the barmaster so it therefore seems that the mine was abandoned at about this date.

The name given to the mine by cavers (Pool Cave) was apt at the time (Ford 1967) as the mined stope was almost full of crystal clear water. This was subsequently pumped out to reveal the mine seen today. The question must be asked as to why this water as not re-accumulated in the mine? Perhaps cavers inadvertently disturbed ground that now allows the mine to drain. It could be possible that the mine contains a deeper series of passages that await discovery, or that the water now drains into Deepdale Resurgence (see 5 below) along natural passages drained by the subsequent mining operations?

At the foot of the crag and a few feet south of the entrance to Chance Mine is a small hole. This leads into a natural narrow rift that ends after a few feet (J. Barnatt pers. comm.). The extremely small entrance, at first glance, does resemble a partly filled mine level and it is possible that miners dug it out in their search for workable amounts of lead ore.

2e. Bullhay Dale Calcite Mine, (also known as Horseshoe Dale Calcite Mine (Plate 5).
The entrance to the mine (SK 0989 6999) is one of the most visually striking within the whole of the Derbyshire Mineral Field. It comprises of two large adits, the 'top' adit being the bigger, located within a east-west orientated vein about 10-20 feet in width which hades slightly to the south. The vein walls show excellent examples of large areas of slickensides. Immediately outside the two adits, when the mine was working, was a large tip of calcite. This tip was subsequently removed and the immediate area 'opencasted' (see below).

The 'lower' adit (4 feet wide x 12 feet high x 40 feet long) being the main access into the mine, leads after a short distance to a mound of mine waste that gives access to a short sloping passage or 'rise hole'. This in turn leads into the upper workings of the mine. These workings are cavernous and very impressive being an excellent example of early 20th century calcite workings (10-20 feet wide x 40-60 feet high x 400 feet long).

The 'top' adit is separated partly into two by a large 'rider' of calcite, more will be said about this feature later (see below). It terminates about 400 feet from 'the day' at a large pool. The calcite vein 'pinched out' at this location (see below). In the roof of the upper workings are, what appears to be, three shafts (?) which link it to the surface. These could simply be where the calcite vein as been stoped out to the surface.

A short distance up Bullhay Dale a short trial level of a few feet in length has been driven into a vein of calcite that runs parallel to the main vein lower down the dale. It is not known at what date this was driven.

The documented history of calcite mining at this location starts in late 1912 when correspondence with George Eagle, Barmaster for the High Peak (Flindall 1998), contains letters sent to him by Michael Simpson of Chelmorton and Edwin Bacon of Youlgreave concerning the mine.George Eagle was written to in December 1912 by both men (Letter from Edwin Bacon. December 4th 1912)

...a mine in Horseshoe Dale Nr. Hindlow...since then I have three men working at the mine...I have bought crushing and dressing machinery...

And on the same day (Letter from Micheal Simpson)

Today I found three men working in our spar mine: one was Bacon of Youlgreave. I understand they started yesterday. Mr. Wheeldon has not mentioned selling the spar nor has he given me notice to remove my grinder &c. They had pulled up the bed and were using the planks for wheeling on. I ordered him out and told him 'that I had possession of the mine and had opened it out, and had driven it up to the Vein'.

The *grinder* referred to above could be a reference to a type of Blake-Marsden jawcrusher or a set of crushing rollers.There was thus friction between the persons involved as to who actually had ownership of the mine. This was partly resolved a few days later by George Eagle writing to Edwin Bacon (December 10th 1912)

The mine is claimed by Michael Simpson and if you enter it you will be trespassing until you free it and I have no business with it until it is freed.

Nothing further is known about the mine until 3 years later in 1915 the following appears (Letter from George Eagle to the Clerk of Council, Duchy of Lancaster Office, London. July 2nd 1915)

....is at a spar mine in Bullhay Dale and that about two years ago (1913) *a trial opening was made there by Mr. James Dunn Bacon of Youlgreave. This is not registered as a lead mine. Since about January 1914 the mine has been worked for spar by the Buxton Lime Firms Company Ltd...*

It appears that Michael Simpson of Chelmorton lost his right to the mine sometime during 1913, although this seems to be un-documented. The last recorded owners of the mine, the Buxton Lime Firms Company Ltd., sent the following letter, to George Eagle, on August 5th 1915

We are not at present working the Spar in Bullhay Dale.

Therefore mining ceased at this mine sometime prior to August 1915, although interest in the mine and general area was shown over 35 years later by a large local mining company (Letter from the Middleton Mining Company Ltd. Estate Office, Middleton-by-Youlgreave. May 26th 1951)

....we understand that you will register us as claimants for the lead title in and around the Bullhay Valley, pending such time as we present a dish of lead to you for measurement.

Brown (2005) states that the mine was worked during the 1950s and it is now known that this work was undertaken by the above noted company. They opened out the mine on a larger scale and worked it using tubs, rails and shovel loaders. He also states that the mine was being worked by Derbyshire Calcite Limited of Biggin in 1967. It is highly likely that this work was done as tributors to the above company.

The mine was again at work in the mid-1970s initially by the Middleton Mining Company and later on tribute. The surface plant had already been removed from the site and work was concentrated within the large 'top' adit. The calcite vein suddenly 'pinched out' in the eastern range and a trial hole was excavated in the floor to 'test' the vein, which also proved fruitless. The depression created has subsequently filled with water leaving the large pool that remains today. The most striking feature within the 'top' adit is the large 'rider' that separates the adit longitudinally. This 'rider' is composed of at least seven 'slickensided' calcite 'strings'. This was left *in situ* as it is composed of brown calcite whereas the main vein was of white calcite.

The large tip outside the 'top' adit had been partially removed, presumably by Derbyshire Calcite Limited during the late 1960s (see above). The remainder of the tip was removed and a lower adit was discovered driven along the bottom of the calcite vein. The adit was 6 feet in height and was connected to the 'top' adit by the 'rise holes' that are evident today. It is not known, with certainty, who was responsible for driving this 'lower' adit into the vein but it is possible that it dates from December 1912 as noted by Michael Simpson of Chelmorton *...opened it out, and had driven it up to the Vein* (see above). The floor of the 'lower' adit was excavated for a further 6 feet to create the level that remains today.

After complete removal of the surface tip the vein was 'opencast' outside the lower adit entrance leaving the depression that remains today (partly backfilled). The calcite was sent to Arbor Low Mine on Long Rake for processing. The calcite output acquired during this last period in the mine's life is estimated at about 2000 tons (Terry. Worthington pers. comm.).

2f. Churn Hole Cave.
This totally natural cave (SK 1055 7188) at the head of Marl Dale has a visually striking entrance but ends abruptly after about 10 feet. It is included here because of its probable links to the previously noted Slurry Pond Mine (see 2a above).

This cave along with the nearby Churn Hole Rock Shelter (SK 1054 7185) was archaeologically excavated by Micah Salt of Buxton in the late 1880s. Turner (1899) alludes the following regarding the cave

The fissure just above the mouth of the cave is the opening of one of the lead veins, so prevalent in Derbyshire. It has not been wrought. If the cave had been inhabited by miners – as assumed by some authorities – most probably, they would have opened it out, as it was so close to hand....

The cave does indeed contain a mineral vein in the roof but this appears to be predominately calcite with small patches of barytes. No galena is evident within the vein which confirms the above statement made by Turner.

Interestingly the vein appears to be in alignment with the one noted at Slurry Pond Mine (see 2a) and Topley Head Calcite Mine (see 2g) and is therefore on the westerly continuation of the Horsesteads/Glory/Portaway vein system or a branch from it.

2g. Topley Head Calcite Mine.
This mine is stated to be on the western flank of Marl Dale (centred SK 1045 7195). It was definitely in work during 1964 at which time there were several short adits into the vein, an openpit, several inclines, huts of wood and corrugated iron, small iron tubs, petrol hauler on main incline and a lorry with crane mounted at the openpit. A shaft of about 40 feet deep with a chain ladder was also located here. The site was worked at this date by Slater Excavations Limited.

In early September 1967 the mine appeared to have been abandoned with the openpit partly filled with rubbish and the iron and wooden huts removed. At this time it is noted that the main incline appeared to have been extended by about 5 yards.

In late September 1967 the shaft was descended to about 35 feet depth. The shaft had 10 feet of old timber at the bottom and the calcite vein was visible in the opposite walls. The vein was stated to be about 2 feet thick in the shaft. The shaft was rectangular in section being 7 feet by 5 feet. Evidence of an older shaft alongside the one descended was noted at this time (Ivor Brown, pers.comm.).

A recent visit to the site of the mine as revealed that the vein as been almost entirely backfilled and no surface remains or the shafts noted could be found. The only feature to survive, albeit overgrown, is the old route of the incline running almost horizontally along the western side of Marl Dale. The calcite vein worked at this location must be on the same vein recorded above at Slurry Pond Mine (see 2a) and Churn Hole Cave (see 2f).

2h. Deepdale Cave.
Almost directly opposite Thirst House Cave and beneath the crags of Ravens Tor (SK 0961 7129) is an obvious large cave entrance. The entrance leads immediately into a bedding plane crawl that ends after 70 feet. This cave was also archeologically excavated by Micah Salt in 1889 (?) (Turner 1899) at which time animal bones, potsherds and a Romano-British knife was discovered within the debris in the cave entrance. This cave is totally natural and contains no evidence for mining.

Graffiti in Thurst House Cave.
Both the outer and inner chambers of Thirst House Cave are festooned with graffiti spanning several centuries. Most appear to date from the 20th century possibly left by generations of cavers and casual tourists. Earlier initials, names and dates can be found in both chambers alongside the more modern ones.

Outer Chamber.
The most interesting and oldest group of initials and dates are located on the north wall of the chamber (see Fig. 2). These have been carefully and deeply chiselled into the limestone. It is impossible to say that this is the handywork of miners prospecting within the cave, but from the workmanship involved, it is a possibility. In reality the prominent dated initials today appear as **TF 1661** on account of an attempt to remove them. The bottom line of the **E** has in fact been broken off. Turner (1899) notes these initials as **TE** in his account of the excavations at the cave therefore this 'vandalism' was perpetrated sometime after 1899.

Names and initials are also found chiselled into the south wall of the chamber (Fig. 3). W. Millett was a friend of Micah Salt and helped him to excavate within the cave. Perhaps H. Hallam was also connected with these excavations.

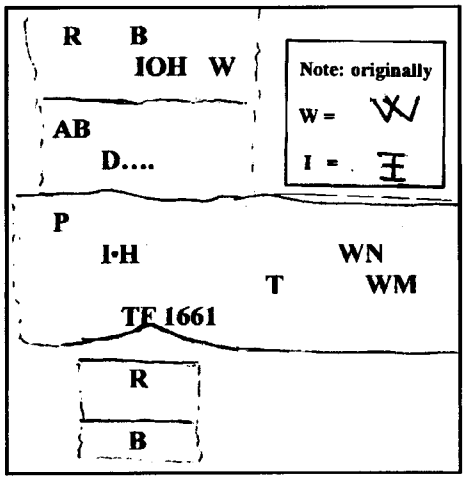
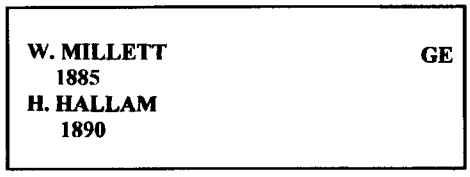


Fig. 2. Diagrammatic representation of initials on the north wall of the outer chamber of Thurst House Cave/Mine.

Fig. 3 (below). Initials carved on the south wall of Thurst House Cave/Mine.



Inner Chamber.
The only chiselled initial to be found within this chamber is the single letter S

As in the outer chamber the walls of the inner chamber are festooned with the scratched inscriptions. Early examples, some of which are now hard to read, include the following who were, presumably, visitors to the cave.

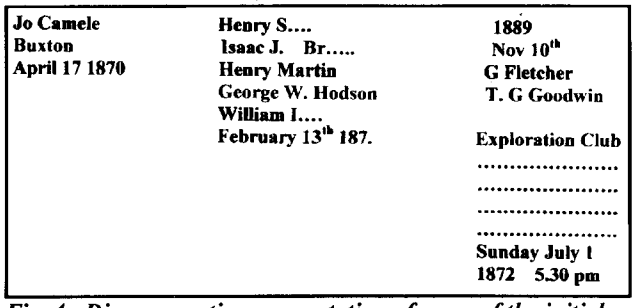


Fig. 4. Diagrammatic representation of some of the initials scratched on the Thurst House Cave/Mine inner chamber

4. Lead objects recovered during excavations in Thirst House Cave c1890-93.
During the archaeological excavations at Thirst House Cave several lead objects were discovered, these are listed below

September 1890 Spindle whorl of lead. 1 inch diameter.
August 1892 Imperfect mould of lead.
October 1893 Spindle whorl of lead. 1 inch diameter.

Spindle whorl of lead. 1 inch diameter. There is the impression of a coin on it, as if a matrix of clay had been formed by a coin impressed in it, and the molten lead then poured into it.

While these items were presumably made from local lead ore, discarded by people living or seeking refuge in the cave, there is no positive evidence to suggest this was mined and smelted at the cave. Such items are relatively common in domestic contexts at sites of this date throughout the Peak District.

The Resurgences described.
Deepdale Resurgence (SK 0969 7129). In wet weather a large volume of water appears amongst boulders strewn in the dale floor and forms the stream that flows, northwardly, through the dale. The source of the water is undoubtedly from the nearby Thirst House Cave system and Chance Vein therein. This underground stream could be the one noted by Turner (1899) (see 2c above).

Deepdale Side Resurgence (SK 0981 7155). Located immediately below the footpath, this resurgence, in wet weather becomes powerful and augments the stream in the dale floor. It drains the natural fault, containing Hading Vein Level (see 2b above), that crosses the dale at this point. The resurgence appears to be completely natural.

Illy Willy Water.
Immediately to the north of Chelmorton village and at the foot of the southern flank of Chelmorton Low is the strangely named spring locally called *The Illy Willy Water*. This natural spring rises from the outcrop of the Upper Millers Dale Lava where Grove Rake crosses it (SK 1159 7035). Cameron (1959) notes the *Water Spring* recorded in 1690, which is very probably identical (Rieuwerts, 2001). The water from the spring is channelled down the main street where it feeds several roadside troughs to finally disappear into a roadside drain. Although not known it is possible that this in turn enters into one of the vein systems noted above to finally reappear in the resurgences in the floor of Deep Dale (see 5 above).

Farey's notes on the dales.
Farey (1811) records both the location of Deep Dale and Marl Dale, but after careful examination of his notes on the dales it is now realised that the dales recorded by him have changed names since his writings or that he simply got confused in calling which dale by which name. It appears that from his descriptions and distances that he classed Deep Dale as Marl Dale

Marl-Dale, NW of Chelmerton, extending SSW about 1 ¼ m. from the Wye River to Deep Dale, 4th Lime; a large Cavern.

And likewise he seems to have classed Back Dale as Deep Dale

Deep Dale, N of Brierley-foot Toll Bar, near Chelmerton, extending about ½ m. SSW from Marl Dale, 4th Lime.

Also when noting *Chelmerton Cavern* (Thirst House Cave) in Deep Dale he again records it as being located in Marl Dale

Chelmerton Cavern, in Marl-Dale, W of Chelmerton, in 4th Lime (Pilk. 1.76).

It is clear that his information came from Pilkington's writings on Thirst House Cave (see 2c above). Therefore what we now know as Deep Dale, was called by Pilkington (1789) *Chelmerton Dale* and by Farey (1811) *Marl Dale*.

The Ordnance Survey 1st edition 1 inch to one mile map of the area (1840) records the dale as Deep Dale and also shows the location of Thirst House Cave within the dale. This suggests that both the dale and cave were commonly known by these names by this later date.

Derbyshire's largest 'pudding pie' limekiln.
During research for this paper an article was discovered that cited the 'firing' of the largest limekiln within Derbyshire at the nearby hamlet of King Sterndale. Limeburning and lead mining are two of Derbyshire's oldest industries and the following is included for interest:

Little more than a century ago, King Sterndale resembled a barren heath, with a chess-board arrangement of walls. The Pickfords (of removals fame) *then in residence at the Hall demolished many of the walls, and from the stone, built what an eyewitness of the day has*

described as a 'pudding', 'the like of which has ne'er been seen, nor e'er again will be'. This pudding was oval in shape, 200 yards in circumference, and 20 yards in diameter. Each bed of stone was 4 feet thick, and needed approximately 100 'tubs' of coal for firing. The limestone, when burnt, was distributed to farms not only in the immediate vicinity, but throughout Derbyshire. The 'baking' of the pudding had been of such ferocity, that more than two acres needed to be levelled, harrowed and ploughed (Critchlow n.d.).

The exact location of this massive 'pudding' is no longer known but it is presumed to have been somewhere within the 'Park' (centred SK 091 716) created by the Pickford family.

A Water Wheel to rival the Lathkill Dale Mine and Laxey wheels.

The Pickford family also owned and worked the gritstone quarry and adjacent mill at Goyt's Clough in the Goyt Valley (SK 0121 7324). The above already quoted document contains a reference to the wheel used at this mill (Critchlow n.d.)

Here was situated a great water-wheel, second in size only to the one at Laxey...The enormous wheel at Goyt's Clough was used mainly for the scouring of the stone.

Unfortunately Critchlow fails to give the dimensions of this wheel or her source of information. The description given almost mirrors the one used to describe the wheel at Lathkill Dale Mine near Over Haddon (SK 1905 6582) as the 'largest except one in the Kingdom'.

This wheel was erected at the mine during 1836 but by 1861 it had been removed to an unknown location (Rieuwerts 2000). Was the wheel from Lathkill Dale Mine sold to the Pickford's for use at their mill in the Goyt Valley? Recent field inspection of the remains of the mill show that only one breast wall for the water wheel survives. The height of the wall suggests that the wheel in use at this mill was only 20-25 feet in diameter. Therefore the above statement by Critchlow remains a mystery.

Significant dates.

1754-1755 Lead ore measured at Spice Pudding or Thirst House Mine in Deep Dale.

Pre-1770 Chance Vein freed to the SE of Deep Dale.

1782 William Bateman working a portion of Chance Vein to the SE of Deep Dale.

1787 Benjamin Farmer working a portion of Chance Vein to the SE of Deep Dale.

1789 Pilkington records a miner discovering the inner chamber of Thirst House Cave in Deep Dale.

1841 Chance Vein freed to the NE of Deep Dale.

1880s-1890s Thirst House Cave, Deepdale Cave and Marl Dale Cave and rock shelter archaeologically excavated by Micah Salt of Buxton. Hidden chambers at Thirst House Cave described in local press.

1912 Michael Simpson of Chelmorton working calcite at Chance Mine in Deep Dale and at Bullhay Dale Mine.

1913 Edwin Bacon of Youlgreave working calcite at Bullhay Dale Mine.
1915 Michael Simpson of Chelmorton working calcite at Chance Mine in Deep Dale. Buxton Lime Firms Company Ltd working calcite at Bullhay Dale Mine.

1917 Michael Simpson sells Chance Mine in Deep Dale to W. Noaks of Burton on Trent for £10.

1951 Middleton Mining Company Ltd of Youlgreave enquire about mining in the Bullhay Dale area.

1964 Slater Excavations Ltd working calcite at Topley Head Mine in Marl Dale.
Pre-1967 Topley Head Calcite Mine abandoned.

1967 Derbyshire Calcite Ltd of Biggin working calcite at Bullhay Dale under tributation from the Middleton Mining Company Ltd.

Pre-1970 Calcite mining ceased at Bullhay Dale Mine.

mid-1970s Bullhay Dale Calcite Mine re-opened by the Middleton Mining Company Ltd. Upper level worked. Lower level deepened. Surface tips removed and immediate area outside opencasted at surface.

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